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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION IX  
75 Hawthorne Street  
San Francisco, CA 94105

SFUND RECORDS CTR  
1918-01569

**MEMORANDUM**

DATE: July 3, 1996

SUBJECT: Explanation of Significant Differences for the Purity Oil Sales Superfund Site

FROM: Nancy Lindsay, H-7

TO: Keith Takata, H-1

*John B. Lee for*

Attached is the Explanation of Significant Differences (ESD) for Purity Oil Sales Superfund Site in Malaga, California. This ESD describes changes to the remedial action that was selected in the 1992 Record of Decision for the Soils Operable Unit (OU2). This ESD is based upon pre-design data which was collected at the site during 1994 and 1995. The results of the pre-design studies along with the recommended conceptual design are documented in the *Pre-Design Summary and Conceptual Design Report*, dated July 1995, by Smith Environmental for the Purity Oil Steering Committee.

In summary, we plan to modify the edges of the RCRA-equivalent closure cover to eliminate the need for a retaining wall. We plan to extend the cover to the rear of the Golden State Market, which is currently adjacent to the site at the northeastern boundary. Gas collected from beneath the closure cover will be monitored, but is not now of either sufficient quantity or concentration to warrant treatment. We also plan to decrease the number of soil vapor extraction wells from 58 to 4, based upon field soil permeability measurements. In addition, because groundwater concentrations appear to have decreased to near MCLs since the extraction and treatment system has been operating, we plan to collect soil vapor data after installation of the cover is complete. This information, combined with groundwater data will help determine the effectiveness of the closure cover in preventing further groundwater contamination.

We plan to issue a fact sheet to the community, informing residents of the planned changes to the selected remedy. We will also hold a public meeting later this month, and may also contact trailer park residents individually. Owners of the additional affected property have already been notified by letter of the actions to be taken.

The changes have been discussed with ORC, CalEPA/DTSC, and the PRPs and no objections to the changes have been received.

Please indicate your concurrence with this ESD by signature on the line provided below.

*Keith A. Takata*

Keith A. Takata  
Director  
Superfund Division

## EXPLANATION OF SIGNIFICANT DIFFERENCES FOR THE 1992 RECORD OF DECISION AT THE PURITY OIL SALES SUPERFUND SITE IN FRESNO, CALIFORNIA

### **Introduction**

The U. S. Environmental Protection Agency (U.S. EPA) is issuing this Explanation of Significant Differences (ESD) for the 1992 Soils Operable Unit Record of Decision for the Purity Oil Sales Superfund Site.

A fact sheet is being sent to community members pursuant to Section 117(c) of CERCLA in order to provide an explanation of significant differences to the remedial action selected in 1992 for the Soils Operable Unit of the Purity Oil Sales site.

### **Background**

The U.S. Environmental Protection Agency and California Environmental Protection Agency Department of Toxic Substances Control maintain oversight authority for the Purity site.

The seven-acre Purity Oil Sales Superfund site is located at 3281 Maple Avenue (at Golden State Blvd.), approximately one-half mile south of the Fresno city limits in the Malaga township. Under the Fresno County General Plan, the Purity site is in a zone designated heavy industrial. The site is located in a mixed-use area and is surrounded by agricultural and industrial land to the west, a metal recycling facility to the north, a residential trailer park and convenience market to the northeast, a propane distributor to the east, a small farm to the southeast, and a used auto parts business to the south.

### **Site history & selected remedy**

Petroleum waste oils were re-refined at the Purity Oil Sales site between 1934 and 1975. These waste oils came from businesses such as service stations, car dealers, truck stops, electrical transformer yards, municipalities, school districts and the military. The oil was re-refined using a number of treatment processes including clarification, chemical addition, acidification, dehydration, distillation, and filtration. The oil and by-products from the refining process were collected and stored in sumps and storage tanks and the process wastes were disposed of on-site in sludge pits.

In 1973, a superior court ordered Purity Oil to empty and backfill the waste pits. The California Regional Water Quality Control Board issued a cleanup and abatement order in 1975 to the owners of the site. No evidence is available to indicate that petroleum waste stored in the pits was ever emptied before the pits were completely filled with construction debris. A fire at the site in 1976 destroyed the main warehouse building and adjacent equipment. The remaining equipment was removed from the site in 1976, and the area was partially regraded. Seven large steel tanks were all that remained of the processing equipment until they were removed by EPA in October 1990. Purity Oil Sales has been a Superfund site since 1982.

U.S. Environmental Protection Agency (EPA) issued a Remedial Investigation Report in 1988 and a Feasibility Study for the Purity Site in 1989. In late 1989, EPA signed a Record of Decision for the extraction and treatment of contaminated groundwater, provision of an alternate water supply, and removal of storage tanks. The tanks were removed from the site in 1990; an alternate water supply was provided to local residents in 1990; and the groundwater treatment system has been operating since November, 1994.

EPA signed a second Record of Decision (ROD) for treatment of contaminated soils on the site in 1992. The components of this decision consisted of the following: 1) construction of a layered cover over the site consistent with landfill closure requirements of the Resource Conservation and Recovery Act (RCRA); 2) soil vapor extraction (between the buried waste layer and the groundwater table) intended to prevent further groundwater contamination; 3) construction of a slurry wall around the perimeter of the site to a depth of twenty-five feet; and 4) lining of the portion of the North Central Canal located adjacent to the site.

This fact sheet explains the differences between what EPA plans to implement based on new site specific information and based on the design specifications for the soils remedy and selected elements of the 1992 ROD. To the extent that this Explanation of Significant Differences differs from the 1992 ROD, this ESD supersedes the ROD.

### **Summary of Remedy Modifications**

Under a 1994 Administrative Order on Consent with EPA, the Purity Oil Sales Steering Committee agreed to prepare the design for the components of the Soils Operable Unit remedial action. Pre-design studies were conducted at the site during 1994 and 1995. The results of the pre-design studies along with the recommended conceptual design are documented in the Pre-Design Summary and Conceptual Design Report, dated July 1995, by Smith Environmental for the Purity Oil Steering Committee. Additional design details are contained in the Pre-final (90%) Design Report: Purity Oil Sales Site: Operable Unit Two (OU-2), dated April 1996 by Smith Environmental for the Purity Oil Steering Committee.

**RCRA-equivalent cap:** The ROD states that the site will be covered with a cap that satisfies RCRA Subtitle C requirements. Pursuant to the ROD, a layered cap with gas and liquid drainage collection systems will be constructed. The ROD also specifies a passive-gas treatment system for gases that may emanate from beneath the closure cover. The treatment system equipment would have consisted of a sulfur dioxide scrubber and carbon adsorption for the VOCs. However, based on pre-design studies it was determined that due to the predominance of low molecular weight hydrocarbons in the gas mixture, carbon adsorption would not be an ineffective treatment.

Since the RI/FS did not include field studies to measure gas generation rates, the steady-state volume of gas that will be passively generated is unclear, but it is believed that it will be far less than the 2,000 cubic feet per minute estimated in the feasibility study. During pre-design a conservative gas generation rate was estimated based on gas generation at municipal landfills. Using this gas generation rate of 8 cfm, coupled with the VOC vapor concentrations from the pre-design studies, indicates that the gas stream composition will not exceed the San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD) allowable emission standards. However, in order for EPA to confirm that gas emissions do not exceed the SJVUAPCD standards, the gas collection system installed as part of the closure system will be monitored quarterly following closure cover installation.

Although EPA does not believe that treatment will be necessary to achieve emission standards, the post-closure emission monitoring would also provide us with data that would allow for proper design and sizing of equipment for a treatment system if treatment ever does become necessary in the future.

The ROD also stated that a retaining wall would surround the closure cover. The need for the retaining wall has been eliminated by re-engineering the slopes at the edges of the cover.

During pre-design studies, contamination was found on privately-owned property beyond the current fence line surrounding the Purity site. The soil samples showed lead concentrations of approximately 10,000 parts per million (ppm) at one foot below ground surface in the rear yard of the Golden State Market. Historical aerial photographs indicate that this property was probably once the site of a waste pit. This property was part of the Purity site until it was sold in 1959. The

Responsiveness Summary prepared for this ROD stated that off-site areas with site-related contamination would also be remediated, consistent with the selected remedy. The rear yard area of the market will have several feet of soil removed and will then be filled and regraded in a manner consistent with the overall site cap.

The southeast ½-acre corner of the site is owned by Fresno Recycling Company. The RCRA-equivalent cap will cover the area within the fence line of the Purity site and will include this property.

The cover will meet all landfill closure requirements of both RCRA and California CCR Title 22 Section 67288.

**Soil Vapor Extraction:** The 1992 ROD states that soil vapor extraction wells are to be installed and screened from below the buried waste layer to the water table. Soil vapor extraction was selected to remove volatile organic compounds from the soil in order to protect the groundwater from the threat of further contamination at concentrations exceeding either federal or state drinking water standards.

For the FS, in lieu of actual measurements, an estimate of soil permeability was used to calculate both the radius of influence for a vapor extraction well and the number of wells required to cover the site. The estimates were based on average permeability observed at other petroleum waste sites. The radius of influence was assumed to be 30 feet and the required number of wells calculated from this radius was 58. This assumption represented the shortest radius of influence likely to be encountered at a site of this type where SVE is a viable remedial technology. Actual field measurements demonstrate that the soil is far more permeable than the estimates prepared for the FS and used for the ROD. The radius of influence of each well based on the field data is now calculated to be 150 feet. In addition, the western portion of the site where no pits were located was found to have relatively low (less than 1 ppmv) volatile contaminant concentrations in the soil gas. Such low concentrations present no threat to groundwater and, consequently, require no treatment. By installing soil vapor extraction wells which extend influence over the eastern two-thirds of the site, the number required has been decreased to four.

No modeling was performed during the Remedial Investigation or Feasibility Study to estimate the extent to which soil vapor contributes to groundwater contamination. During the pre-design studies, actual samples of soil vapor were taken during both static and flow conditions. Using this information, modeling was done and the results indicate that current soil vapor concentrations do not significantly affect groundwater contamination. Because modeling can not predict future concentrations precisely, questions remain as to the degree the vapor beneath the buried waste layer contributes to groundwater contamination. After the closure cover is installed and infiltration of surface water through the waste layer stops, we believe that continued contamination of the groundwater from this source will be insignificant. Currently, the concentration of contaminants in the groundwater is fairly low. EPA believes that, prior to full operation of an SVE system, an additional opportunity to evaluate the actual effectiveness of the closure cover in preventing further contamination of the groundwater is prudent.

Although full implementation of SVE may not be necessary once the closure cover is in place, EPA has insisted that the design package currently being produced include the design of the complete soil vapor extraction system. All subsurface piping for the prospective soil vapor extraction system (piping that would be exceedingly difficult to install once the closure cover is in place) will be installed during closure cover construction. Quarterly soil vapor monitoring is proposed to take place for two years following completion of the cover. We believe that two years will allow for sufficient observation of closure cover performance and seasonal effects. Reevaluation of the data at that time will determine whether final installation and operation of the soil vapor extraction system will be necessary to protect groundwater. This reevaluation is expected to include two-dimensional modeling utilizing the soil vapor data taken both before and

after installation of the closure cover. This model prediction, coupled with the concurrent post-closure-cover groundwater quality data, will allow us to gain a better understanding of the actual effectiveness of the closure cover in protecting the groundwater and help us to draw better conclusions as to the usefulness of SVE at this site.

If the reevaluation clearly indicates that the closure cover is effectively preventing further contamination of the groundwater, then full implementation of the soil vapor extraction system will not be required.

A groundwater pump-and-treat system is currently operating at the site and will continue to operate until the cleanup standards specified in the 1989 groundwater ROD are met.

**Slurry wall:** The ROD states that construction of a slurry wall twenty-five feet deep along the site boundary would be expected to minimize subsurface migration of contaminants. A slurry wall is constructed by filling a trench approximately three feet wide with a mixture of soil, bentonite, and water. A slurry wall is most effective when used to retard the migration of liquids in the saturated zone and when "keyed" or "locked" into an impermeable layer underlying the saturated zone.

Because intermittent clay layers may underlie portions of the site, it was hypothesized that these clay layers could allow perched groundwater to infiltrate either toward or away from the layer of buried contamination. However, results of pre-design moisture sampling of the vadose zone at the perimeter of the site indicated that no perched liquids exist. The current groundwater extraction and treatment system has been successfully treating contaminated groundwater pumped from the aquifer beneath the site since 1994; it will continue to operate until drinking water standards are attained. We now believe that construction of the slurry wall is not necessary to provide protection of human health and the environment.

**Canal lining:** No significant changes to this component of the remedial action are anticipated. The design will accommodate comments and recommendations supplied by the Fresno Irrigation District.

**Five-Year Review:** CERCLA Section 121(c) and the National Contingency Plan require five-year reviews of remedial actions that result in hazardous substances remaining at the site above levels that allow for unlimited use and unrestricted exposure to ensure that the remedy remains protective. EPA guidance also provides that five-year reviews will be conducted for long-term remedial actions where the cleanup levels specified in the ROD will take five or more years to attain. (40 CFR Section 300.430(F)(4)(ii); Structure and Components of Five-Year Reviews, OSWER Directive 9355.7-02, May 23, 1991.)

The five-year review requirement applies to both soils and groundwater operable units at the Purity site.

**Cost of the remedial action:** The 1992 ROD estimated the total cost of the remedial action at approximately \$36 million. This rough estimate represents the present worth of the capital costs plus thirty years of operation and maintenance and was prepared as part of the feasibility study. Estimates were based on a screening-level design effort and were expected to fall within a range from approximately 30% higher to 50% lower. However, as noted above, the feasibility study did not use actual field data to calculate the number of soil vapor extraction wells, resulting in significant over-estimation of cost.

Similar over-estimation occurred with estimates of the sizing of the passive vapor collection system. Cost of the remedial action is currently estimated at approximately \$8 million. The estimate was prepared with approximately 60% of the design detail complete and reflects the changes described above. Because we do not now believe that passive gas collection treatment will be required, the estimate does not include either the costs of the treatment equipment or the long-term operation and maintenance. We believe that this estimate is more accurate because it

is based on actual data taken during pre-design and a more detailed design. Construction costs are expected to be within 20% of the current estimate and if required, estimates for gas treatment will be prepared upon completion of the evaluation described above.

**Opportunity for Public Participation:**

This Explanation of Significant Differences, along with the Pre-Design and 90% Design documents will be placed in the local repository for public review.

The local repository for the Purity Oil Sales Superfund Site is:

Fresno County Central Library  
Government Documents  
2420 Mariposa Street  
Fresno, California 93721  
209/488-3195

Documents will also be maintained at:

U.S. EPA, Region 9  
Superfund Records Center  
95 Hawthorne Street  
San Francisco, California 94105  
415/536-2000

In addition, EPA will conduct a community meeting to discuss this Explanation of Significant Differences with local residents.

**Support agency comments:**

California Environmental Protection Agency/Department of Toxic Substances Control concurs with the above changes to the selected remedy.

**Affirmation of statutory determinations:**

Considering the new information that has been developed and the changes that have been made to the selected remedy, U.S. EPA and CalEPA/DTSC believe that the remedy remains protective of human health and the environment, complies with Federal and State requirements that are applicable or relevant and appropriate to this remedial action, and is cost-effective. In addition, the revised remedy utilizes permanent solutions to the maximum extent practicable for this site.